

ISOLATED FULLY DEPLETED SILICON-ON-INSULATOR REGIONS BY SELECTIVE ETCH

Abstract

The present invention provides a method of forming an ultra-thin and uniform layer of Si including the steps of providing a substrate having semiconducting regions separated by insulating regions; implanting dopants into the substrate to provide an etch differential doped portion in the semiconducting regions underlying an upper Si-containing surface of the semiconducting regions; forming a trench in the substrate including the semiconducting regions and the insulating regions; removing the etch differential doped portion from the semiconductor regions to produce a cavity underlying the upper surface of the semiconducting regions; and filling the trench with a trench dielectric, wherein the trench dielectric material encloses the cavity underlying the upper Si-containing surface of the semiconducting regions. The upper Si-containing surface of the semiconducting regions has a uniform thickness of less than about 100 Å.